Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

the pleasure of fitting gloves and mittens. In time, every boy of the large throng had gone, his hands comfortably covered and his arms filled, trudging homeward with the good things which he would share with those at home and so, himself learn, in turn, the pleasure which comes from giving to others, as well as from receiving.

To the question, "Why a live chicken?" Mr. Bernstein explained to us that, as some of the boys were from Orthodox Jewish families, it was advisable.

By the time the distribution was over, the last train from the city out to the prairies had sped away while the snow kept coming down so thick and fast as to now threaten and block car traffic. The sidewalks were obliterated by the deep drifts through which we floundered to our boarding house, two tired and happy women. The only train out in the morning was scheduled for 6.30. This must be taken if we were to eat our Christmas dinner with the nephew and his family awaiting us, one hundred and twenty-five miles north. Having no alarm clock with us, we slept with one eye open, or took turns keeping awake, all night, and finally, at five o'clock the next morning, dressed and started out, only to find that the trolleys which should convey us to the railroad station, had not commenced to run. Save for a few other travelers waiting for the trolley, the streets were dark and quiet until a bunch of "newsies" came along. It seems to be an unwritten code for the "newsies" to be cheerful, jolly boys and we soon felt the warmth of their happy natures as they laughed and chattered in a group near by.

Eventually the trolley came, just in time to get us to our train, and in five hours we were back with our own, dear ones, happy of course to be with them again, but happier by far for our work of the past ten days, knowing that without those privileges of service to others we never could have known such a very Merry Christmas as was ours that year.

LOBAR PNEUMONIA: ITS CAUSES, SYMPTOMS, PREVENTION AND TREATMENT

By JOHN B. HUBER, A.M., M.D.

Lobar pneumonia, or genuine, (as distinguished from broncho-pneumonia,) or croupous or fibrinous pneumonia, pneumonitis or lung fever, is a systemic infection having for its characteristic lesion an inflammation of the elements essential to pulmonary respiration; that is, the terminal bronchioles and the air vesicles with the blood capillaries surrounding them—the lung **parenchyma**. The presence and growth of pathogenic bacteria are essential to the existence and development of lobar pneumonia. This disease is now properly placed among the general or systemic infections; formerly it was incorrectly classed among diseases confined only to the lungs. The focus of infection is in the lungs; but other organs and tissues are involved and often very seriously. Indeed the ravages of the disease are sometimes worse in other organs than the lungs—the kidneys, for example.

So, besides the pulmonary lesion, there are like to be lesions elsewhere. The inflammation in lobar pneumonia is exudative, the alveolar blood vessels (those enmeshed with the air-vesicles) give up serum and fibrin from their contents, with the accompanying emigration of white blood cells. Sometimes the exudate is only serous and not purulent. The fever in this disease terminates by crisis and with comparative suddenness; it is a self-limited disease and runs a definite course such as is characteristic of bacterial diseases. The whole of one or more pulmonary lobes is usually involved in the pneumonia process. The death rate of lobar pneumonia is enormous, sometimes exceeding that of tuberculosis. (The two diseases together destroy more than half the human race.) The aged suffer most; and "terminal pneumonia" ends the lives of most old people. It is a disease of very wide distribution, existing in every state of the Union; it is considered to prevail more in the south than in the north.

Causation. In lobar pneumonia, as in most infectious diseases, we must distinguish two kinds of causes: first, the pathogenic bacterium, which is the essential or specific cause; and second, the predispositions, which weaken the body and thus render it susceptible to the attacks of the germ.

The specific cause of lobar pneumonia is the diplococcus pneumonial of Fraenkel and Weichselbaum, called also the pneumococcus or the micrococcus lanceolatus. It appears in encapsulated pairs. It has been found in at least 90 per cent of the lobar pneumonia cases in which it has been sought. A temperature of 52°C. (123°F.) will, in ten minutes, destroy this germ; it is, however, fairly resistant to drying and sunlight, especially when embedded in sputum, which is thus protective; the capsule increases the resistance. When desiccated and powdered, the germ is much less resistant, being killed by direct sunlight in about an hour. Like many other bacteria it resists diffused sunlight better than direct; it may live fifty-five days in the former.

The pneumococcus is found in the nasal, pharyngeal and bronchial secretions and in the mouths and even in the conjunctivae of many healthy persons; it is found in the rusty sputum of pneumonia patients and in their saliva and nasal secretions, in their blood sometimes and almost always on autopsy in the smaller blood vessels. It is likely to persist for weeks or months in the mouths of pneumonia convalescents.

Infection of the lungs comes about by inhaling the pneumococcus; suspended in droplets of saliva or mucus, or being adherent to foreign particles, they may be carried fairly deeply into the bronchial tubes. It is very likely that they do not by this means reach the air-vesicles, but that they are conveyed thence to the latter by means of the lymphatics and the blood vessels of the pulmonary tissues; transmission by the circulation is called "hemotogenous" infection. The question of these *viae of infection* has been much debated, but it were unprofitable to set forth this discussion here.

As intimated, the pneumococcus is found in many parts of the body other than the lungs (being conveyed throughout the economy by the lymphatics and the circulation); and it is found in many other pathological conditions besides lobar pneumonia. Here we have well illustrated the biological principle that the same germ may be present and active in various affections the clinical manifestations of which are quite different. Besides being responsible for lobar pneumonia, the pneumococcus may set up inflammation in the heart, the spleen, the stomach and intestines and especially the kidneys. This germ is allied with other germs in broncho-pneumonia (a disease distinct from lobar pneumonia), in pleurisy, influenza, endo- and pericardis, cerebrospinal meningitis, peritonitis (by way of the diaphragm), acute synovitis, iritis, dacryocystitis, in metastatic infections (following the invasion of the blood stream); in dental, muscular and subcutaneous abscess; there is probably no part of the body insusceptible to the pneumococcus, and sometimes in ways quite fatal.

We should now consider a second important biological principle—that in a disease clinically well defined (as is pneumonia) a number of different germs may be found active, in addition to the one germ which is the specific or essential cause; this phenomenon is "mixed infection," which oftentimes makes grave a disease that might otherwise not be so. Thus we observe in practice that some cases of pneumonia are quite hopeless—the patient dying, no matter what we can do; whilst others recover with much satisfaction to family, doctor and nurse. One reason here is (among others presently to be considered) that in the serious cases such virulent and deadly germs as the streptococcus are associated with the pneumococcus in mixed infection; or innocuous germs are allied with the pneumococcus. Besides the streptococcus, the typhoid, diphtheria, grippe, bubonic plague and catarrh germs and the bacillus coli communis have been found in lobar pneumonia.

In considering the severity of pneumonia in some cases and its comparative benignity in others, we must remember also that some strains of pneumococci are very virulent whilst others have little virulence.

Infection in pneumonia, as in many other germ diseases, was recognized long before Fraenkel, in 1884, discovered its germ. Lobar pneumonia was formerly known, as it is today, to be endemic in certain houses, barracks, jails and schools. It is sometimes pandemic. Direct infection used to be common; and such may now be the case in hospital wards. Nurses and doctors seldom succumb (although of course there are cases where our associates have taken the disease and have died of it). Among reasons for our comparative immunity are: doctors and nurses know what prophylaxis they must employ; they do not (or should not) attend cases when they might be susceptible by reason of bodily weakness or ill-health; and they have no fear, which is a potent factor in the contracting of any infectious disease.

We must now dwell upon the factor of predisposition, which is at least as important as that of the essential bacterium.

Anything which weakens the tissues and organs, and makes them susceptible to microbic attack is a predisposition, such as must always be taken into account in considering infectious diseases. Consider for example a family of five or six, of whom one or two will come down with pneumonia whilst the rest escape the disease. Why don't they all suffer, since in the family relation they must all have been more or less subject to the germinal attack? The reason lies in that the bodies of those who became sick with pneumonia were predisposed; whilst in the bodies of those who escaped, the organs and tissues were sufficiently virile to withstand the infection; and by means of such protective agencies (in good working order) as phogocytasis and the opsonins to render impotent and even to destroy within the body the specific germ.

Now, as we have noted, the pneumococcus exists in the body even in health; some unusual conditions are therefore necessary to the development of lobar pneumonia; this tendency then diminishes up to the fifteenth year, after which, with each subsequent decade, it increases. Venerable people are very prone to pneumonia, especially by reason of the hypostatic congestion which is always imminent in the aged who are weak in body.

Negroes are more prone to pneumonia that whites, and men more than women, undoubtedly because of the greater physical hardships and the exposure which the family's bread winner has to endure. In the winter months and especially those times in winter when the weather is changeable and unsettled (as in December and March) there is much pneumonia. During a long and even stretch of moderately cold weather, there is not so much suffering from the disease. Cold and wet, especially when the extremities become chilled and wet, predispose by lowering the resistance of the pulmonary tissues. Cold alone will not give pneumonia; indeed cold air is one of our most valuable therapeutic measures in lobar pneumonia, but cold will, in a weakened body, devitalize the tissues, and so make them good soil for the pneumococcus to flourish in. Arctic explorers are amazingly free from lobar pneumonia whilst near the poles; but when they return to civilization they are as likely as anyone to succumb. The reason for this must be that the pneumococcus is unknown in the rare, clean air of the Arctic and the Antarctic, whereas this germ is all too prevalent in the Temperate Zones. Seamen and fisher folk, I understand, seldom come down with pneumonia; and this must be because of the purity of the blessed sea air.

Fatigue very decidedly predisposes the body to pneumonia; men who must work arduously during long hours and in inclement weather are very prone to it. Medical men of large practice, who become exhausted through much work day and night, often succumb. Unhealthy conditions of the upper air passages and of the respiratory mucous membranes ("respiratory catarrhs") generally tend to pneumonia. And there are chronic diseases of the heart, kidney and digestive tract upon which pneumonia is oftentimes superimposed; and here the result is likely to be fatal. In this connection it is well stated that persons rarely die of the disease which has the most seriously and most persistently affected them. It is the "terminal affection" from which they succumb; and among these latter the pneumococcus infection is very frequent. Thus pneumonia is one of the most frequent and the most fatal affections of advanced age.

Injuries to the chest wall not unfrequently predispose to lobar pneumonia. We speak thus of "contusion pneumonia." The external wound may be but slight; whilst the resulting internal lesion may be very serious. It is a matter of constant surprise to the necropsist that there may not be even a mark upon the skin to indicate the site of the traumatism, whilst autopsy will reveal extensive tissue destruction.

Alcohol is an enormous predisposing factor in lobar pneumonia. As is the case with all stimulants, the aftermath of an alcoholic debauch is to leave the system depressed and its tissues depleted and enervated; one must consider also the dreadful quality of whiskey (containing as it does wood alcohol) which is oftentimes consumed. Lobar pneumonia is found more in urban than in rural conditions; this is by reason of the more strenuous and enervating life in cities, the germ-laden dust which is inhaled, the tenement life, the overcrowding and the consequent increased liability to infection. It is said that newcomers to cities are less prone than urban natives to lobar pneumonia; if this is so (and I make no doubt it is) it must be because such immigrants have not yet become enervated by city life.

Symptoms. I have always believed a nurse should be a good observer of symptoms in order that she may report intelligently to the physician what has occurred in his absence; and especially should this be so regarding lobar pneumonia, a fact which I think will be evident as we proceed. So I go now with some particularity into the symptomatology of a typical case of this important and always serious disease.

The incubation period in lobar pneumonia is uncertain. In perhaps one-third of the cases bronchitis may precede the attack; as also chilliness, a little fever, malaise and oppression about the thorax. But the invasion is characteristically abrupt, with severe chills lasting perhaps an hour, sudden rise of temperature (even during the chill), and all the symptoms of sthenic fever. There may, to begin with, be vomiting. In a few hours intense and sharp pain develops, generally referred to below the nipple, in the lower anterior portion of the chest or in the axilla of the affected side, increased by inspiration and coughing; this pain may be referred to the abdomen. After three or four days it disappears. The patient lies on the affected side; his cheeks are flushed, especially in the centre; he appears sometimes anxious, sometimes apathetic. His dyspnoea (due to pain, toxemia, fever, loss of respiratory function and nervous conditions) is manifest by his dilated nostrils; the respiration is rapid, shallow, jerky, often grunting, and evidencing air starvation; the worse the breathing, the more lung tissue there is likely to be involved; the normal ratio of one to four between respiration and pulse is greatly disturbed, being oftentimes one to two. The respirations are thirty to forty in the minute; in children even one hundred.

There is a short, painful cough, dry in the beginning; after the first day appears the characteristic "rusty" or "prune-juice sputum," which is dark brown, red or orange-yellow, thick and very tenacious, or containing viscid red pellets and perhaps casts of bronchioles. In a few cases the sputum, may, however, remain as in bronchitis.

With the development of the disease the pulse becomes full and bounding, from 110 to 116 to the minute; in serious cases it may soon become small and feeble. A pulse over 120 will give us much anxiety; we must then fear sudden or gradual heart failure. Here, as always when we examine the pulse, we must ascertain not only the frequency, but also the rhythm (its possible irregularity and intermittance); its quality (whether it be hard and incompressible); and possible dichrotism (which is, however, rare in lobar pneumonia).

The condition of the heart and circulation is important to consider. The heart sounds are loud and clear during the fever; there may be bruits heard; the second sound over the pulmonary artery is accentuated, an indication of the condition of the lesser circulation. With distention of the right chambers and failure of the right ventricle to empty itself completely, the pulmonary second round becomes less distinct. Dulness to the right of the sternum will indicate an engorged right heart. With gradual heart weakness and signs of dilatation the long pause is greatly shortened, and the sounds approach each other in tone. Sudden early heart collapse will be denoted by a feeble, rapid pulse and increasing cyanosis. Heart weakness may be due to paralysis of the vaso-motor center with consequent lowering of the general arterial pressure; this is evidenced by the soft, easily compressible pulse, gray ashy face, cold hands and feet, clammy perspiration and progressive prostration. Or heart failure may (usually later in the disease) result from the toxic action upon the myocardium, or to the right heart dilatation consequent upon engorgement.

In lobar pneumonia the temperature, after its initial rise, continues high and fairly constant—104° to 105° in the evening and 102° to 103° in the morning. A higher degree is likely when the upper lobes are involved. There is sometimes a very great rise (107°) immediately before the crisis. On the other hand there may be a pseudo-critical period, the temperature dropping several degrees and then rising again. The crisis supervenes generally on the seventh day from the initial chill; and if not then, on the fifth, the eighth, the sixth or the ninth day in the order stated. This crisis is manifest by defervescent or rapid fall in fever; in a few hours (from five to twelve) and usually in the evening there is a fall to normal or below, with profuse sweating in most cases, and with sudden mitigation of distressing symptoms; nevertheless, there will as yet be no decided change in the local pulmonary condition. This defervescence may come even on the second day and it may be delayed a month; soon after it, resolution is accomplished, though this may be delayed two months. A very rapid defervescence to a decidedly subnormal temperature should occasion concern and even alarm; there may then be profound prostration; epistaxis, hematuria or intestinal hemorrhage may accompany it.

Other symptoms which manifest this serious disease are: herpes of the lip, nose, genitals or anus. The skin may be hot and dry (a serious condition); or bathed in perspiration from beginning to end. The nervous system may evidence aberrations grading from slight delirium to stupor; the patient may be maniacal, especially in alcoholic cases; headache may be distressing; insomnia may become serious. The tongue is furred and moist or dry (a serious condition). There is constipation; perhaps also severe meteorism. The urine is an acute fever urine—high colored, of high specific gravity, with albumen, casts and blood; the chlorides are considered to be absent from this excretion in lobar pneumonia.

The important matter of the physical signs of lobar pneumonia is of course for the physician's exclusive consideration.

Convalescence, complications and sequelae. The convalescence from lobar pneumonia is usually rapid. A prolonged temperature, or an unusual rise at or after the crisis must give us reason to fear a relapse, or an invasion of another lobe, or a complication, or a prolonged resolution. Death may come perhaps quite suddenly any time after the third day (but most often on the seventh, eighth or ninth day) from cardiac failure, from the extent of lung tissue involved, from the severe general infection, from a coronary embolus or from a complication.

First among the complications to be feared comes a pleurisy with effusion, or an empyema developing on the same side with the pneumonia. The patient will do well until the sixth or seventh day; but defervescence will not be complete. After a few days of temperature rise this complication becomes manifest; we shall generally find pneumococci, strepto- or staphylococci in the pleuritic fluid. There may be general catarrhal bronchitis, especially with the pneumonia of epidemic influenza; much mucous (mixed perhaps with blood) is coughed up: over both lungs we hear sibilant, sonorous and coarse râles; there is troublesome dyspnoea, high temperature and tendency to venous congestion and heart failure.

There may be very serious acute pericarditis, evidenced by precordial pains and friction sounds, rapid and feeble pulse, rapid breathing and cyanosis. The symptoms of this lesion may be more marked than those of the pneumonia; possibly the latter may be overlooked. This pericardis is especially likely to complicate left lung pneumonia, the process being by direct local extension.

Endocardis may have existed before the pneumonia, and this would be very dangerous. Here articular rheumatism may also have to be considered. Bad heart action and general venous congestion must then be feared; especially must we consider that a well marked mitral or aortic stenosis may in such cases give no murmur at all. Acute meningitis is an unusual but a fatal complication; we may find great delirium, contractions of groups of muscles, general convulsions, and toward the end stupor and coma. Here the various cocci concerned in pneumonia undoubtedly play a sinister part.

Jaundice will evidence hepatic involvement. Acute degeneration of the kidneys is frequent (it is not particularly dangerous); acute exudation nephritis is much less frequent; it is not of itself fatal, but it may add to the gravity of the pneumonic condition; those who are already sufferers from chronic nephritis (which may previously have given few symptoms) rarely recover from pneumonia, which is in such cases "terminal."

As sequelae of lobar pneumonia we must fear: delayed resolution, which may end in chronic interstital pneumonia; abscess or gangrene and such psychic abnormalitis as may end even in permanent insanity.

I have thus far considered typical lobar pneumonia, such as is characterized by the initial chill; rapid rise of temperature; (which then remains fairly constant until the crisis, about the seventh day); insomnia; restlessness; vomiting; pain in the region affected; rusty sputum; and marked dyspnoea. I should now very briefly touch on such atypical varieties of lobar pneumonia as are met with in practice.

1. Larval pneumonia: the abortive cases, enduring but two or three days, with the invasion not especially marked, the chill slight, the fever moderate.

2. Pneumonia peculiarly localized. In typical lobar pneumonia the lesion is most often in the right lower lobe; next often in the left lower lobe; next the right upper lobe; next the left upper lobe. In atypical cases the apex may be the focus of the disease; or there may be "central pneumonia," the focus being very deep-seated, perhaps at the root of the lung; or there may be double pneumonia; in migratory (creeping or wandering pneumonia) different regions are successively involved; in massive pneumonia (happily rare) the bronchi of the consolidated areas are plugged up with fibrous exudate, so that dyspnoea becomes desperately bad.

3. The pneumonia of chronic alcoholics is seen often in hospital wards; these cases do very badly indeed.

4. The pneumonia of infants and children; really a broncho-pneumonia.

5. The pneumonia of the aged runs a very irregular course; it is practically "terminal," supervening upon such chronic diseases as pulmonary tuberculosis, nephritis, diabetes and arteriosclerosis.

6. Secondary lobar pneumonia may supervene in patients who have sustained a traumatism (especially of the chest wall) or who are confined to bed after a surgical operation; some of these are called "ether pneumonia" cases. Secondary pneumonia is found also in patients already suffering from meningitis (or other diseases of the encephalon and spinal cord), pleurisy, malaria, cardiac or renal diseases.

7. Epidemic pneumonias appear in which the communicable nature of the disease is very pronounced; such cases are always pretty severe. They have from time to time been especially associated with grippe epidemics.

8. Toxic or typhoid pneumonia are very bad cases, in which the severity of the constitutional symptoms has no marked relation to the amount of lung tissue involved; only a very small part of one lobe may be affected. But the systemic infection is great; and we are really dealing with a pneumococcus septicaemia. Typhoid fever is not necessarily a factor; but the term is used because the symptoms make one think of the third week of typhoid. The temperature is very high; the heart's action soon becomes rapid and feeble; the tongue is dry; the cerebral symptoms are marked; death is the rule.

9. Delayed resolution and organizing pneumonia. Here, resolution, instead of beginning a day or two after defervescence, may be delayed for weeks. Or the exudate may be replaced by new connective tissue, with fibrinous consolidation of the involved part of the lung and subsequent contraction; this latter is "organizing pneumonia."

Prophylaxis. The prophylaxis of lobar pneumonia should be very much as in tuberculosis. We disinfect, burn or otherwise destroy the sputum; as also any vomit or the patient's discharges. The patient's mouth must be kept as clean as possible. The nurses in attendance should keep their own mouths and throats very clean with washes, dentifrices and gargles; should wash their hands frequently and then dip them in bichloride or lysol solutions. We should disinfect at least the patient's room soon after his recovery or death; it were well indeed to disinfect the whole house, especially if there have been several cases in the family, or in epidemic pneumonia. The value of fumigation is now being disputed; whether we fumigate or not, however, the windows throughout the house should be opened wide at the end of the case, and the rooms exposed as far as possible to the sunshine and the fresh air. The bedding, rugs and so forth should be thoroughly exposed to nature's disinfectants, the best of all, sunshine and pure outdoor air.

Those who have no occasion should not come in contact with pneumonia patients; in hospitals these cases had best be isolated. The susceptible, by reasion of predisposing factors to disease, should not be unnecessarily exposed to pneumococcus infection. Expectoration in public places should be prohibited. There is probably a great deal of pneumococcus infection in the dust-laden atmosphere of large cities. It is likely that methods of immunization against pneumonia by means of vaccination will be perfected; this is not yet an established procedure.

Treatment. The treatment of lobar penumonia persued in the Bellevue, New York, Roosevelt, and Presbyterian Hospitals in New York City was thus epitomized by the late Dr. H. P. Loomis: upon admission the patient is usually given calomel in small repeated doses followed by a saline the next morning. Local applications to the chest are generally restricted to cases in which intense pain and distress are felt; such applications are not made as a routine practice. An exclusive milk diet, plain or modified, is adopted during the height of the disease. A temperature of 104° is not regarded as a necessary indication for special treatment unless nervous symptoms (marked restlessness or delirium) accompany the fever. At the Presbyterian, when the temperature exceeds 104°, cold packs are applied to the chest anteriorly; in the New York, alcohol sponging is resorted to and failing that, the cold pack; at Roosevelt, alcohol sponges or cold packs are done; at Bellevue, sponging with tepid water (80° to 85°). Only in the New York and the Presbyterian are tub baths given, nor even then except in cases of toxemic pyrexia or in alcoholics with marked nervous symptoms. Codein is given to control cough (1-4 to one grain every four hours) sometimes heroin (gr. 1-12), and perhaps morphine. Trional and sulfonal are given for insomnia. Pulmonary edema is treated by hypodermic injections of adrenalin; also by atropine, cupping, and stimulation. The use of oxygen is restricted to cases of cyanosis and dyspnoea. The three cardiac stimulants are alcohol, strychnine and digitalis; of these alcohol is the most used, and the most relied upon. Digitalis is used in Roosevelt. Indications for these stimulants naturally vary in different cases. Nitroglycerine is only occasionally used. In Roosevelt rectal saline injections are given, especially for alcoholics and when nutrition is failing, eight ounces of a normal salt solution are introduced every four hours through a funnel attached to the end of a catheter; these injections are well retained and seem to be of decided benefit.

In addition to this excellent résumé the following considerations are to be emphasized:

Elimination as a fundamental principal here, as in therapeusis generally. We do what we can to rid the organism of the toxins generated in pneumonia; and this by means of the emunctories—the bowels, the kidneys and the skin. To this end we employ calomel and the salines; several times during the course of the disease epsom salts are appropriate. As diuretics we give the acetate, the bicarbonate or the citrate of potash; as diaphoretics the solution ammonium acetate and the spirits of nitrous ether.

We constantly watch the heart and the circulation; there is truth in the statement that pneumonia usually (but not always) kills through the heart. We frequently and with care feel the pulse; we thus learn not only the number of beats, but we detect also increased (high) tension, or diminished (low) tension; we appreciate the pulse rhythm (its intermittance or its irregularity); the quality of the pulse—whether it be hard (relatively incompressible) or soft (compressible); and dichrotism of the pulse which is rare, but may supervene later in pneumonia when the body has become exhausted by the disease. How valuable the nurse who can ascertain these things, and communicate them to the attending physician for his guidance in medication!

We aim for a pulse of 90 to 100, without increased tension, soft, of good quality and strength. Immediately we detect cardiac weakness there are prescribed (at first in small doses, and repeating frequently as per indication) alcohol, strychnine, digitalis, straphanthus, convallaria, atropine, caffein, nitroglycerine, alone or in various combinations. A hot poultice of digitalis leaves (made as a flaxseed poultice is made) and applied in the back over the kidneys is sometimes most effective both for the heart and kidneys.

In many cases (especially when the tongue is very dry) alcohol is indicated; in the "delirium tremens pneumonias" we need have no hope whatever unless we give this stimulant freely—to start with, whiskey or brandy, every three hours, increasing as the conditions require. But alcohol is not to be used indiscriminately in every case of pneumonia; here as elsewhere in therapeutics, we should know the reason for what we are doing.

The invasion is a great shock to the patient; therefore a hypodermic of morphine (gr.-1-4) is decidedly indicated, to relieve the dreadful pain, allay fear, and assure rest and comparative comfort. For the pain, hot or cold applications over the regions involved may be prescribed. The lack of sleep is most distressing and weakening; so we induce sleep, or at least relieve restlessness and delirium by means of trional, sulfonal, the bromides or codein. But our anodynes must be given in moderation, for we must ever guard against the possibility of coma or edema. We must change the patient's position from time to time (especially in the aged) to guard against suffocation or hypostatic congestion. Otherwise we should disturb the patient as little as possible.

If oxygen is given the patient must have it earlier than it is generally employed; there will then be not so much occasion for the statement that "the appearance of the oxygen tank indicates the end of the case." This gas is effective if employed before dyspnoea and cyanosis (as indicated by the dusky skin, the blue lips and the prominent veins) are marked. The gas is breathed until these symptoms are relieved, usually for ten minutes at a time, with quarter-hourly intervals. Here we use also atropine (gr. 1-100) strychnine (gr. 1-30), and digitalis (m.x of the tincture)—separately or in combination.

Venesection is little in fashion nowadays; and this largely by reason of the just opprobrium invited by indiscriminate and occasionless blood letting in the past. But when this procedure is really indicated there is none more effective; in serious cases lives may by this means be saved. What are the indications? We may rightly venesect early in pneumonia, in sthenic cases in full blooded individuals, such as policemen; and at any time in the disease we may let blood when there are hyperpyrexia, high tension, a pulse of 120 or more, bad breathing, engorged and distended veins, a distended and overworked right heart, and evidence of distended pulmonary arteries. By venesection, we combat excellently this grave condition; we secure "mechanical disintoxication" by removing blood laden with toxic material; we relieve the right heart and the clogged veins and lung tissue; we restore the circulatory balance; and coincidently we mitigate the high temperature, the cerebral congestion, the pain and the dyspnoea.

Venesection is done as follows: the parts and the instruments used are rendered thoroughly aseptic (septic phlebitis is the only thing we have to fear from phlebotomy); we make a few moderately firm turns of a roller bandage around the middle of the arm; fix the median cephalic vein at the bend of the elbow with the left thumb, and with a lancet or a sharp pointed bistoury open this vein obliquely to its long axis (we prefer not to open the median basilic vein for fear of wounding the subjacent brachial artery). The blood flows freely; the amount abstracted is governed by the pulse; from a pint to twenty ounces may be removed. We then apply a pad of gauze and a figure-of-eight bandage over all. The more rapidly the blood is abstracted the less will be required to lower the force of the circulation. The semi-reclining position were best for the patient during the procedure.

The temperature of the room in lobar pneumonia is set at 65°, and 70° for children; but the principal point here is to have it well ventilated. We do not fear cold air for the pneumonia patient; this phase of the treatment has indeed become quite revolutionized. It is a truly inspiring spectacle, that of the snow-surrounded beds, in the open air, on the roof of the clinic of the Presbyterian Hospital in New York City occupied by pneumonia patients; whilst nurses, gloved, wearing overshoes and clad in winter garments are in attendance. Of course under such circumstances the bedding must be adequately warm; hot water bottles to cold feet; the patient may also wear a "helmet" of wool, which comes down over the neck and clavicles. After the crisis the patient must be taken undoors at the room-temperature indicated.

Hydrotherapy is a most effective measure in lobar pneumonia, as in acute infections generally. By this means we relieve the nervous symptoms, help to restore the vaso-motor tone, reduce the temperature and improve the heart action.

Besides the procedures already stated, we note that the tub is rarely required in lobar pneumonia. Sponging is done for ten minutes at a time. If we use the bath we begin with a temperature of 90° and gradually get down to 80°. There must be no exertion on the part of the patient; he is held and supported while in the bath and the skin is gently rubbed. Only tepid baths will do for the aged, the very young and the very weak.

The diet up to the crisis is mainly fluid—milk for the most part; broths and meat juices, eggs and light cereals; plenty of water, plain or carbonated, to drink; cracked ice to swallow; and lemonade occasionally (but not at the same time with milk). As pneumonia is of short duration, by comparison with such diseases as typhoid fever, we certainly have little occasion for solid food until the deferescence. Food had best be given in a cup or through a tube; the head should not be raised.

We manage the complications of pneumonia as when they are independent affections: When the blood pressure is very low and cardiac failure is feared, saline injections may be given subcutaneously or intravenously. We may inject from one to two pints (sodium chloride ʒi – Ꞓi tepid water), allowing the fluid to flow under the skin from an aseptic fountain syringe: and this hypodermoclysis may be repeated if necessary after eight to twelve hours. A pneumococcus serum is hoped for to be used in the treatment of lobar pneumonia; but this has not yet been perfected. The idea of serum therapy in this disease is logical; for it is a self-limiting disease, an infection, the crisis representing the culmination of the struggle between the patient's antitoxic powers (which a proper serum would reinforce) and the essential bacterium.

Good nursing is most essential in lobar pneumonia; and a reliable and conscientious nurse, practiced in the observation of symptoms, will save the physician many an anxious moment. The pneumonia patient needs constant watching; at any time he may get up a delirium which may prove disastrous; or an edema or a heart failure which, if not at once met, will prove fatal. Two nurses, a day and a night nurse, are always needed in pneumonia; and in most cases each will have to be constantly on the watch.

Obviously there is at present no specific, no routine treatment in pneumonia. We cannot find a treatment which will apply in all cases;

to this end, however, the hospital procedures here outlined are sufficiently definite to form the basis of action. We must individualize in lobar pneumonia; much judgment is required, there is plenty of scope for wise action in this disease; we should here prescribe nothing without some good reason. Simple cases do not require much interference; symptomatic procedure may be all that is necessary; but we must be constantly on the watch, for simple cases may turn out quite seriously; we have collapse and death even in convalescence. In addition to the measures stated, the following have been used: jackets of flannel (or of cotton covered with oiled silk) are made, easily to be opened for the physician's examination. Dry cupping is sometimes done; poultices are made (but rarely nowadays); and sinapisms are employed as counter-irritants. Children do better with hot than with cold applications to the chest. Among drugs, quinine is preferred by some physicians; ammonium carbonate (gr. v-x); guiacol carbonate (gr. xx, a somewhat expensive drug); Dover's powder, Clark's powder, and the salicylates

HOW TO ATTAIN HOSPITAL ECONOMY[1]

By AGNES MEYER, R.N.

Graduate of the City Hospital, Frankfurt, Germany

This question is one of the most important of our days; as everything in life is getting more and more expensive, the hospital management requires much more skilful organization to make both ends meet. I shall try to explain in a few words how much we nurses influence the average daily cost of living for a patient; and how much one person alone can save, if she sets her mind to do so. Many of us have been brought up to sensible economy in our own homes, but when we come to a hospital we frequently forget our good education and become thoughtless and indifferent. The cause of this is, in the first place, that we do not deal with money and therefore do not know the price and value of things, and also because, in most places, it is very easy to get everything you need or want, simplyby giving the written order, sometimes signed by an officer, sometimes not.

It seems important to me, *before buying*, to talk matters over with all the people concerned, to make sure of the usefuless, necessity and price of the object, avoiding by this the purchasing of something that

---

[1] This aticle was written for a prize competition of the German nursing magazine, *Unterm Lazaruskreuz*, and won the third prize. It will appear in the issue for November 15 or December 1. Miss Meyer is in this country for a year, studying American nursing methods.